

Claims.

1. A method for limiting and/or monitoring the use of a data communications connection subject to payment, between IP clients in a packet-switched connection network (15), in

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-a mutual data communications connection is set (105 - 106) between at least two clients (11 - 12), through a connection network (15),

10 -a signalling connection, routed differently (13) from the mutual data communications connection is set (101 - 102) at least to the client to be billed,

15 -a traffic limiter (16), based on at least one of the header-field properties, such as the network addresses and/or the port addresses, of the packets being transmitted, is set (103) for the mutual data communications connection,

-the data communications connection are monitored (104) and billed for (108),

20 -at least one session is transmitted (109) over the mutual data communications connection, and is individuated, and

-the monitored billing to be charged session-specifically for the data communications connection is controlled (110) and/or the monitored billing is defined session-specifically in the billing system (14),

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characterized in that

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-a message is received (107) from the signalling connection concerning the interruption or termination of the session transmitted over the mutual data communications connection, and/or state data (304) is received from the billing system, over the message connection, concerning an absence in the billing system or a deficiency in the billing system of the payment required for providing the session being transmitted over the mutual data communications

connection,

5 -in response to the message concerning the interruption or termination (107) of the session, and/or to the state data (304) received from the billing system, at least one traffic limiter is instructed (212, 305) to break, interrupt, or close the session over the mutual data communications connection, and

- a two-way signalling link is set (302) between the connection-formation system (13) and the billing system, through the mediator (14).

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2. A method according to Claim 1, characterized in that

15 - sessions are monitored and billed for using the connection-formation system (13) by - either receiving a message from the client (11) concerning the termination or interruption of a mutual session or other data communications connection, - or else in response to a message sent from the billing system (14) concerning the lack or deficiency of a payment allocated to the session,

20 - in response to the message, the connection-formation system (13) is used to direct a message to the billing system (14) to limit the session-specific billing, and

25 - further in response to the message, the connection-formation system (13) is used to instruct at least one traffic limiter to close or interrupt at least one session or other mutual data communication connection through the connection network between at least one first client (11) and at least one second client (12).

30 3. A method according to either Claim 1 or 2, characterized in that the connection-formation system (13) is used to receive an initiation message for a data-communications-based service involving at least one first client (11) and at least one second client (12) and to forward it to the billing system (14).

4. A method according to any of Claims 1 - 3, characterized in that

- a message confirming the payment required for the use of a data-communications-based service is received from the direction of the billing system (14), and
- 5 - in response to the message confirming the payment, the operator's traffic-relaying system (15) is instructed to
 - command the formation of a mutual data communications connection between at least one first (11) and one second client (12), and/or
- 10 - command the properties of the mutual data communications connect to be those required by a data-communications-based service, or to be advantageous in terms of the data-communications service.
- 15 5. A method according to any of Claims 1 - 4, characterized in that the connection-formation system (13) is set to open and/or close data communications connections and/or sessions between the clients (11 and 12), using operations according to the MIDCOM protocol.
- 20 6. A method according to any of Claims 1 - 5, characterized in that the interface of the connection-formation system (13) is set for a SIP server in the direction of the traffic control system (15).
- 25 7. A method according to any of Claims 1 - 6, characterized in that at least one client, which is addressed to the address-search system being used, is set for the data communications connection.
- 30 8. A method according to any of Claims 1 - 7, characterized in that a SIP system (13) is used as the address-search system.
- 9. A method according to any of Claims 1 - 8, characterized in that the connection-formation system (13) is set to form data communications connections to the clients, using the address-search system.

10. A method according to any of Claims 1 - 9, characterized in that the billing system (14) is set to provide initiations to instruct the traffic-relaying system (15) to interrupt or terminate a session between the clients (11 - 12).

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11. A method according to any of Claims 1 - 10, characterized in that the traffic-relaying system (15) is instructed to interrupt or terminate at least one session or data communications connection between the clients (11 - 12), in response to the state of the billing system (14) directed to the session or data communications connection, which indicates an insufficient payment in the billing system (14) for continuing the session or data communications connection.

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12. Means for limiting the use of a data communications connection subject to payment between IP clients in a packet-switched connection network, which means include

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- means for setting a mutual data communications connection between at least two clients, through the connection network,

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- means for setting a mutual signalling connection, routed differently to the mutual data communications connection,

- means for monitoring and billing for data communications connections,

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- means for setting a traffic limiter based on the properties, such as the network addresses, of the header fields of the packets being transmitted and/or possibly also on the ports of the traffic limiter, for the mutual data communications connection,

- means for transmitting at least one session over the mutual data communications connection, means for individuating a session, and

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- means for controlling the monitored billing to be charged session-specifically for a data communications connection, and/or means for defining the session specifically monitored billing in the billing system,

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characterized in that the means include

- means for receiving a message over the mutual data communications connection from the mutual signalling connection concerning the interruption or termination of a transmitted session, and/or for receiving state data over the mutual data communications connection from the message connection of the billing system, concerning the lack or deficiency in the billing system of the payment required for the provision of the session being transmitted over the mutual data communications connection,

5 - means for instructing at least one traffic limiter to break or interrupt a session over the mutual data communications connection, in response to a message concerning the interruption or termination of the session, or to state data received from the billing system, and

10 - means for setting a two-way signalling link between the connection-formation system (13) and the billing system, through the mediator (14).

15 20 13. A method according to Claim 12, characterized in that the connection-formation system (13) includes means

-for receiving a message from a client (11) terminating or interrupting a mutual session or other data communications connection, and/or

25 -for receiving a message sent from the billing system (14) in response to the insufficiency or smallness of a payment directed to the session,

30 - means for directing a message, for limiting session-specific billing, to the billing system (14) over the connection-formation system (13) to the billing system (14), in response to a received message, and

- means for instructing at least one traffic limiter to close or interrupt at least one session

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or other mutual data communications connection through the connection network between at least one first client (11) and at least one second client (12), using the connection-formation system (13), also in response to a received message.

5 14. Means according to either Claim 12 or 13, characterized in that they include means for receiving, over the connection-formation system (13), an initiation message for a data-communications-based service concerning at least one first client (11) and one second client (12), and for forwarding it to the billing system (14).

10 15. Means according to any of Claims 12 - 14, characterized in that they include:

- means for receiving, from the direction of the billing system (14), a message confirming the payment required for the use of the data-communications-based service, and

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- means for instructing the traffic-relaying system (15), in response to the message confirming the payment

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- to command the formation of a mutual data communications connection of at least one first (11) and one second client (12), and/or

- to command the properties of the mutual data communications connection to be those required by the data-communications-based service, or to be advantageous in terms of the data-communications-based service.

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16. Means according to any of Claims 12 - 15, characterized in that they include means for opening and/or closing data-communications connections and/or sessions between the clients (11 and 12), by means of operations according to the MIDCOM protocol.

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17. Means according to any of Claims 12 - 16, characterized in that they include means for setting the interface of the connection-formation system (13), in the direction of the traffic-control system (15), for a SIP server.

18. Means according to any of Claims 12 - 17, characterized in that they include means for setting a client, addressed to an address-search system used by at least one client, to the data communications connection.

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19. Means according to any of Claims 12 - 18, characterized in that the address-search system being used is a SIP system (13).

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20. Means according to any of Claims 12 - 19, characterized in that they include means, using the address-search system, for setting the connection-formation system to form data communications connections to the clients.

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21. Means according to any of Claims 12 - 20, characterized in that they include means for setting the billing system (14) to provide stimuli to instruct the traffic-relaying system (15) to interrupt or terminate a session between the clients (11 - 12).

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22. Means according to any of Claims 12 - 21, characterized in that they include means for instructing the traffic-relaying system (15) to interrupt or terminate at least one session or data communication connection between the clients (11 - 12), in response to a state of the billing system (14) directed to the session or data communications connection, which indicates an insufficient payment in the billing system (14) for continuing the session or data communications connection.

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23. A computer software product for limiting the use of a data communications connection subject to payment between IP clients in a packet-switch connection network, characterized in that it includes means according to any of Claims 12 - 22, which are computer-readable software means.